

1971 OPERATING SUMMARY

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MINISTRY OF THE ENVIRONMENT

TIMMINS

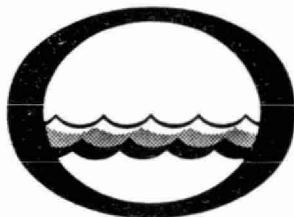
WATER POLLUTION CONTROL PLANT

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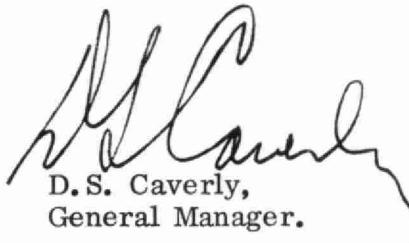


Water management in Ontario

Ontario
Water Resources
Commission

We are pleased to submit for your consideration a summary of operation during 1971 of the water pollution control plant serving your community.

This operating summary contains parameters normally used to measure plant performance and loading, as well as relevant cost data. Because of the concern over eutrophication of our lakes and of the requirement, in many parts of Ontario, to remove the major contributing factor, results of analysis for phosphorus appear in this summary.



D. S. Caverly,
General Manager.



D. A. McTavish, P. Eng.,
Director,
Division of Plant Operations.

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TIMMINS

WATER POLLUTION CONTROL PLANT

operated for

THE TOWN OF TIMMINS

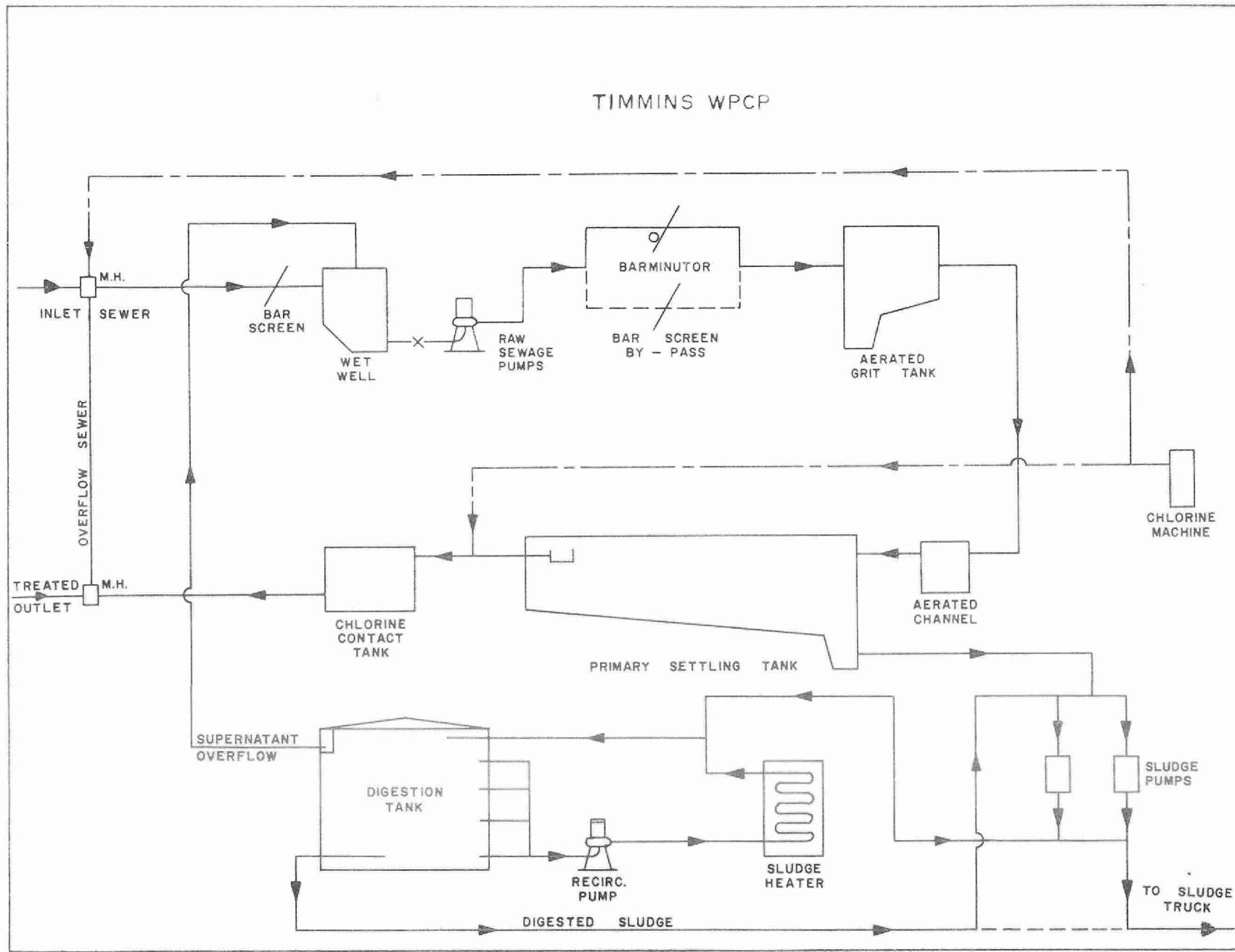
by the

ONTARIO WATER RESOURCES COMMISSION

1971 ANNUAL OPERATING SUMMARY

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DESIGN DATA

PROJECT NO.	2-0071-60	<u>RAW SEWAGE PUMPS</u>
TREATMENT	Primary	<u>Screening</u>
DESIGN FLOW	3.0 mgd	Type: Manually Cleaned Size: 2" opening
DESIGN POPULATION	30,000	<u>Pumps</u>
BOD - Raw Sewage - Removal	180 mg/l 35-40%	Type: Worthington Size: One 3650 gpm @ 26' tdh One 3120 gpm @ 26' tdh One 3120 gpm @ 26' tdh (diesel)
SS - Raw Sewage - Removal	200 mg/l 60-65%	

PRIMARY TREATMENT

Comminution

Type: Chicago Pump Barminutor
Size: One Model C (36')

Grit Removal

Type: Aerated
Size: One 13' x 18 3/4' x 12 1/2'
(19,000 gal)
Retention: 9.1 min
Air Supply: Two Sutorbilt

Primary Sedimentation

Type: Jeffrey
Size: Two 125' x 20' x 12' (avg)
(374,000 gal)
Retention: 3.0 hr
Loading: Surface, 600 gal/ft²/day
Weir, 9900 gal/ft/day

CHLORINATION

Type: F & P
Size: One 200 lb/day

Chlorine Contact Chamber

Size: Two 47 1/2' x 7' x 9' 7"
(37,400 gal)
Retention: 19 min

OUTFALL

To Mattagami River

SLUDGE HANDLING

Digestion System - single-stage,
concrete
Type: PFT (gas mixed)
Size: One 65' dia x 24' swd (80,000
cu ft or 0.50 mil gal)
Loading: 1.35 lb/cu ft/mo

'71 Review

GENERAL

The Timmins plant is a four million gallon per day primary treatment facility. The treated effluent is discharged to the Mattagami River downstream from Timmins.

During 1971 a new chief operator was hired. To replace an operator absent with a prolonged sickness another operator was also hired. The plant is staffed by the chief operator and two operators.

Major overhauls of both sludge pumps, all unit heaters and number 2 clarifier were carried out. The digester, digester gas piping, control room floor, office, washroom, entrance hall as well as all doors were painted by the plant staff.

The waste gas burner was relocated. A potable water line from the Town distribution system was installed to the plant after the failure of the plant well.

A major breakdown of the number 1 raw sewage pump occurred and repair was effected by plant staff.

A new storage shed was installed and modifications made to the existing storage area.

EXPENDITURES

The operating cost for the year was \$67,240.79, an increase of 5 percent over 1970. The greater part of this increase was due to repairs and maintenance.

PLANT FLOWS and CHLORINATION

The average daily flow increased by 0.36 million gallons over 1970. The average daily flow of 3.6 mgd was 90 percent of the nominal design capacity of 4 mgd. Metering problems were partially encountered for three months, therefore the flow figures are partially estimated.

The design daily flows was exceeded 28 percent of the time. However the wet weather design capacity of 9 mgd was not exceeded during the year. On request by the Division of Sanitary Engineering year-round chlorination was begun in 1971. The final effluent was disinfected with 44,900 pounds of chlorine between May and December to maintain a residual of 0.5 mg/l.

PLANT EFFICIENCY

The average raw sewage BOD and suspended solids concentrations were 161 mg/l and 183 mg/l. These loadings are considerably lower than those of previous years. Average BOD and suspended solids reductions were 59 percent and 67 percent respectively and represent good treatment for a primary facility.

A total of 612 tons of BOD and 972 tons of suspended solids was removed during the year. The final effluent concentrations were 66 mg/l BOD and 60 mg/l suspended solids.

A total of 15,125 cubic feet of grit was removed from the raw sewage. This represents an average of 11.5 cubic feet of grit per million gallons of sewage treated which is much above normal and is usually indicative of combined sewers.

SLUDGE DIGESTION and DISPOSAL

A total of 10,560,000 gallons of raw sludge was pumped to the digester. The raw sludge averaged 2.6 percent total solids, 70 percent of which was volatile matter. The digested sludge averaged 2.9 percent total solids of which 62 percent was volatile. A total of 3 million gallons of digested sludge was hauled from the digester by tank truck.

CONCLUSIONS

The project is operating efficiently at average flows of 3.6 mgd. The design capacity of 4.0 mgd is being approached and serious consideration of expansion of the project should be made.

PROJECT COSTS

NET CAPITAL COST (Final)	\$785,370.12
DEDUCT - Portion financed by CMHC/MDLB (Final)	<u>521,108.36</u>
Long Term Debt to OWRC	<u>\$264,261.76</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1971	\$ <u>79,963.90</u>
Net Operating	\$ 67,240.79
Debt Retirement	6,566.00
Reserve	3,781.28
Interest Charged	<u>14,822.66</u>
TOTAL	\$ <u>92,410.73</u>

RESERVE ACCOUNT

Balance @ January 1, 1971	\$ 28,460.22
Deposited by Municipality	3,781.28
Interest Earned	<u>1,783.83</u>
	\$ 34,025.33
Less Expenditures	<u>9,000.00</u>
Balance @ December 31, 1971	\$ <u>25,025.33</u>

OPERATING COSTS

PAYROLL	45 %
FUEL	6 %
POWER	7 %
CHEMICALS	5 %
GENERAL SUPPLIES	5 %
EQUIPMENT	< 1 %
REPAIRS & MAINTENANCE	10 %
SUNDRY	21 %
WATER	N I L %
TRAVEL	< 1 %

1971 COSTS

TOTAL ANNUAL COST

NET OPERATING	73 %
DEBT RETIREMENT	7 %
RESERVE	4 %
INTEREST	16 %

YEARLY OPERATING COSTS

YEAR	SEWAGE TREATED in million gallons	TOTAL OPERATING COSTS	TREATMENT COSTS	
			\$ per million gal	£ per lb BOD
1967	1144.8	\$59, 857. 94	\$52. 28	6 cents
1968	1020.0	54, 186.55	53.00	6 cents
1969	1049.9	59, 394.86	56.57	3 cents
1970	1182.5	63, 815.38	53.97	5 cents
1971	1300. *	67, 240.79	52.00	5 cents

MONTHLY OPERATING COSTS

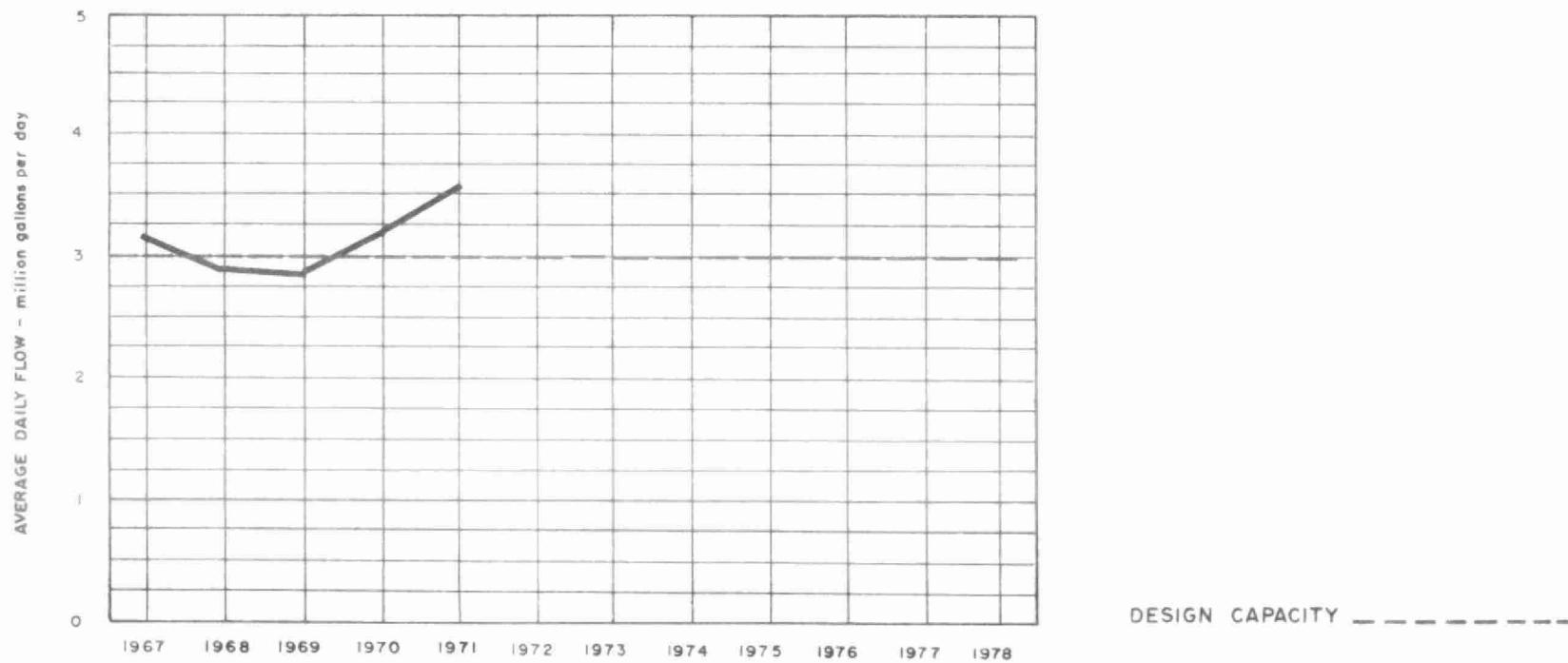
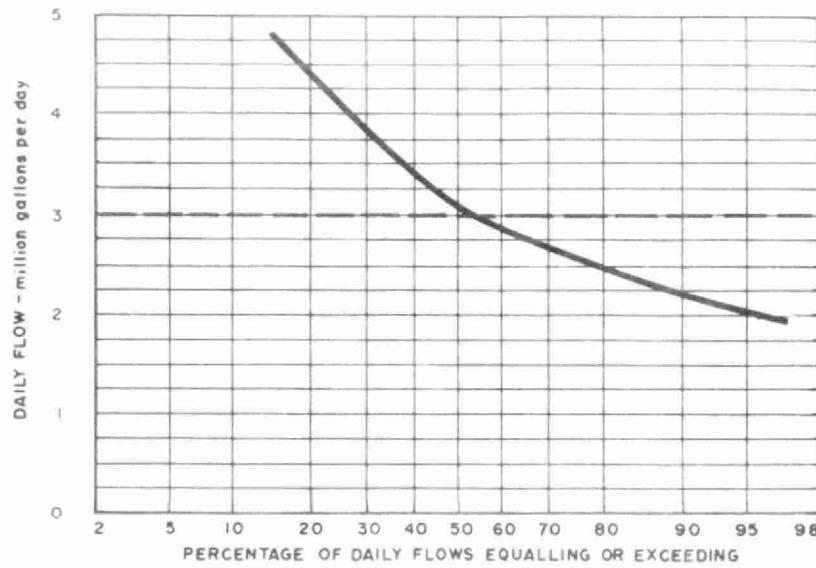
MONTH	TOTAL EXPENDITURE	REGULAR PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICALS	GENERAL SUPPLIES	EQUIPMENT	REPAIRS and MAINTENANCE	SUNDY*	WATER	TRAVEL
JAN	2228.48	1854.52	304.56	-	-	-	69.40	-	-	-	-	-
FEB	5930.41	2753.68	21.22	710.46	680.02	-	206.71	-	404.99	1153.33	-	-
MAR	3988.88	1867.94	-	488.51	330.70	-	261.11	-	-	1040.62	-	-
APR	4239.12	1747.74	-	-	457.18	-	221.63	-	73.35	1739.22	-	-
MAY	5877.29	2568.78	791.39	279.79	456.38	-	341.81	-	101.30	1237.84	-	-
JUNE	6269.15	1261.98	750.40	474.51	417.58	1778.00	178.01	130.00	207.75	1070.92	-	-
JULY	3951.89	902.54	1001.95	-	411.58	-	335.04	-	97.33	1203.45	-	-
AUG	4299.28	2117.67	1006.80	-	380.38	-	157.01	17.19	300.71	-	-	319.52
SEPT	6429.55	1345.43	292.94	188.00	390.78	813.00	172.85	-	516.39	2686.00	-	24.16
OCT	4490.73	2086.11	987.84	188.00	416.38	-	67.80	112.97	548.73	82.90	-	-
NOV	6063.06	1661.79	1000.94	486.26	380.38	(177.95)	425.06	92.38	1157.21	1007.23	-	29.76
DEC	13472.95	2471.67	1669.21	971.00	353.38	813.00	758.47	135.49	3191.14	2865.26	-	245.33
TOTAL	67240.79	22639.85	7826.25	3886.53	4674.74	3226.05	3194.90	488.03	6598.90	14086.77	-	618.77

Brackets indicate credit.

* Sundry includes sludge haulage costs of \$12,517.05

PROCESS DATA

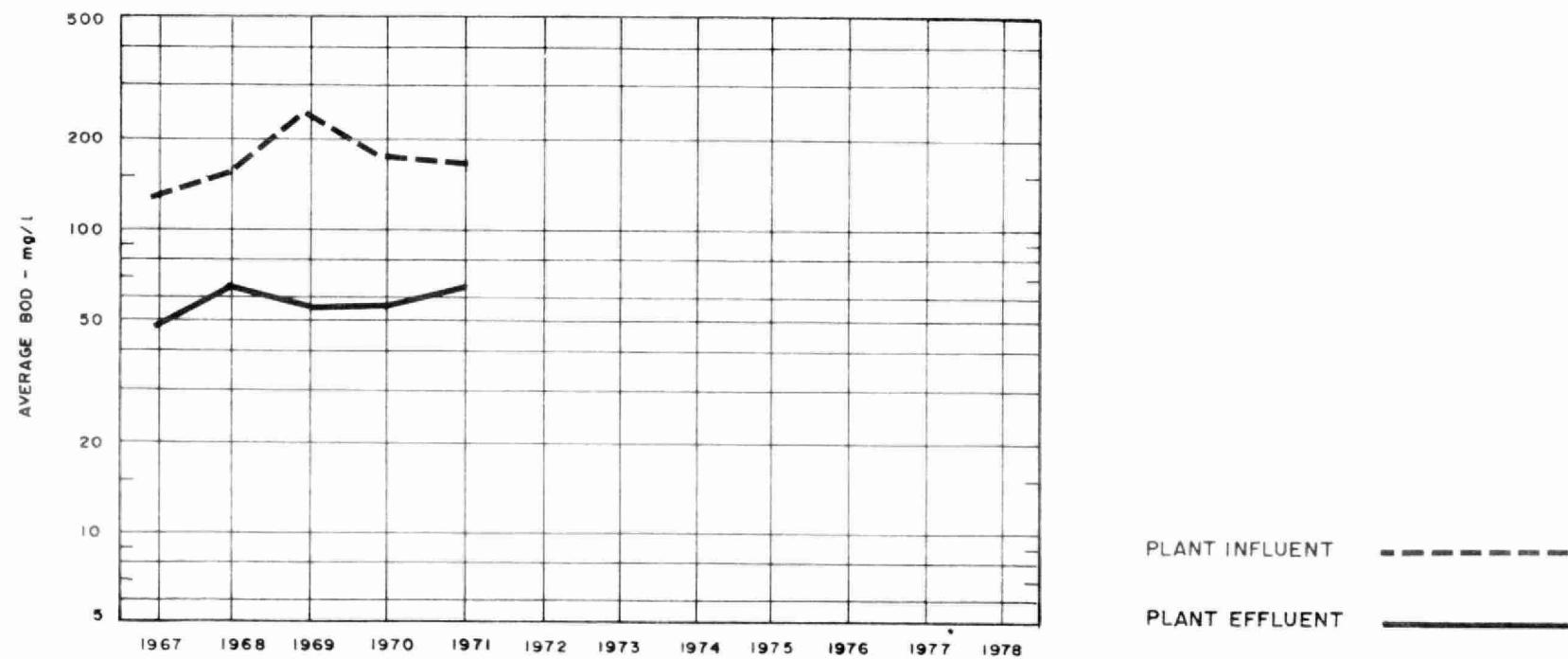
FLOWS



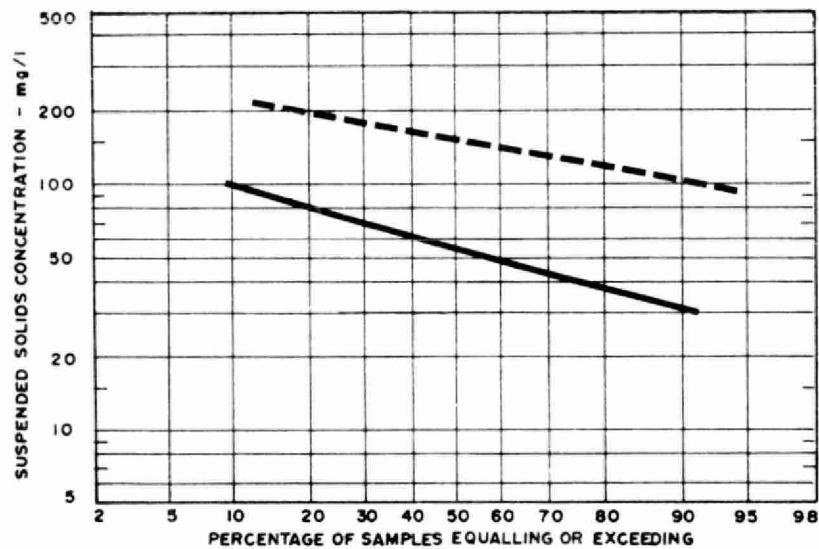
PLANT PERFORMANCE

MONTH	FLOWS				BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				TOTAL PHOSPHORUS		
	TOTAL FLOW million gallons	AVERAGE DAY mil gal	MAXIMUM DAY mil gal	MAXIMUM RATE mgd	INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT	RED%
					mg/l	mg/l	%	10 ³ pounds	mg/l	mg/l	%	10 ³ pounds	mg/l as P	mg/l as P	%
JAN	79.	2.5	3.0	8.2	230	33	85	154.	255	33	87	174.	-	-	-
FEB	75.	2.7	4.2	8.8	300	46	85	189.	480	45	91	325.	-	-	-
MAR	94.	3.1	3.7	9.1	240	100	58	132.	370	90	76	263.	-	-	-
APR	165.	5.5	7.1	9.5	140	70	50	116.	190	70	63	198.	-	-	-
MAY	148.	4.8	7.3	9.3	75	55	27	29.	120	50	58	103.	-	-	-
JUNE	117.	3.9	6.1	9.6	-	-	-	-	-	-	-	-	-	-	-
JULY	86.	2.8	4.2	8.8	180	53	71	109.	125	35	72	77.	6.3	3.4	46
AUG	o/s	-	-	-	125	61	51	-	145	87	40	-	7.0	7.9	0
SEPT	o/s	-	-	-	93	38	59	-	85	53	38	-	9.2	-	0
OCT	o/s	-	-	-	150	120	20	-	140	90	36	-	13.0	13.0	0
NOV	82.	2.7	3.2	5.6	140	79	44	49.	157	58	63	81.	7.7	6.2	19
DEC	144.	4.7	7.9	9.9	150	120	20	43.	125	70	74	79.	9.0	6.6	27
TOTAL	1300. (est)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AVG.	-	3.6	7.9	9.9	161	66	59	102.	183	60	67	162.	8.2	6.8	17
No. of Samples	-	-	-	-	17	17	-	-	17	17	-	-	10	8	-

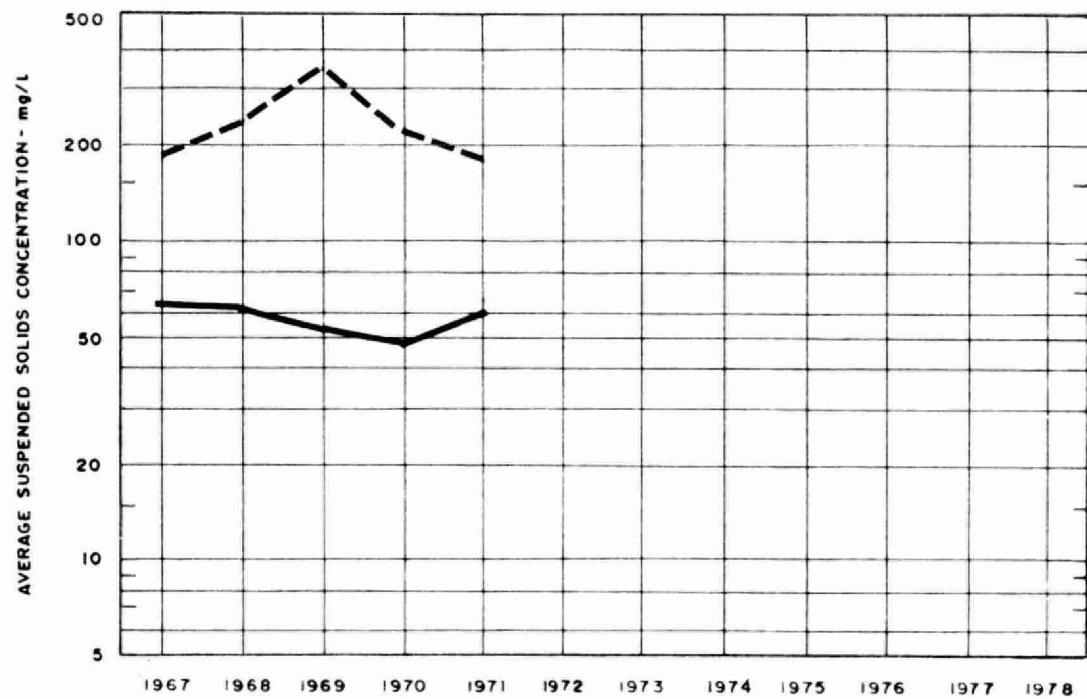
BIOCHEMICAL OXYGEN DEMAND



SUSPENDED SOLIDS



PLANT INFLUENT -----
PLANT EFFLUENT —————

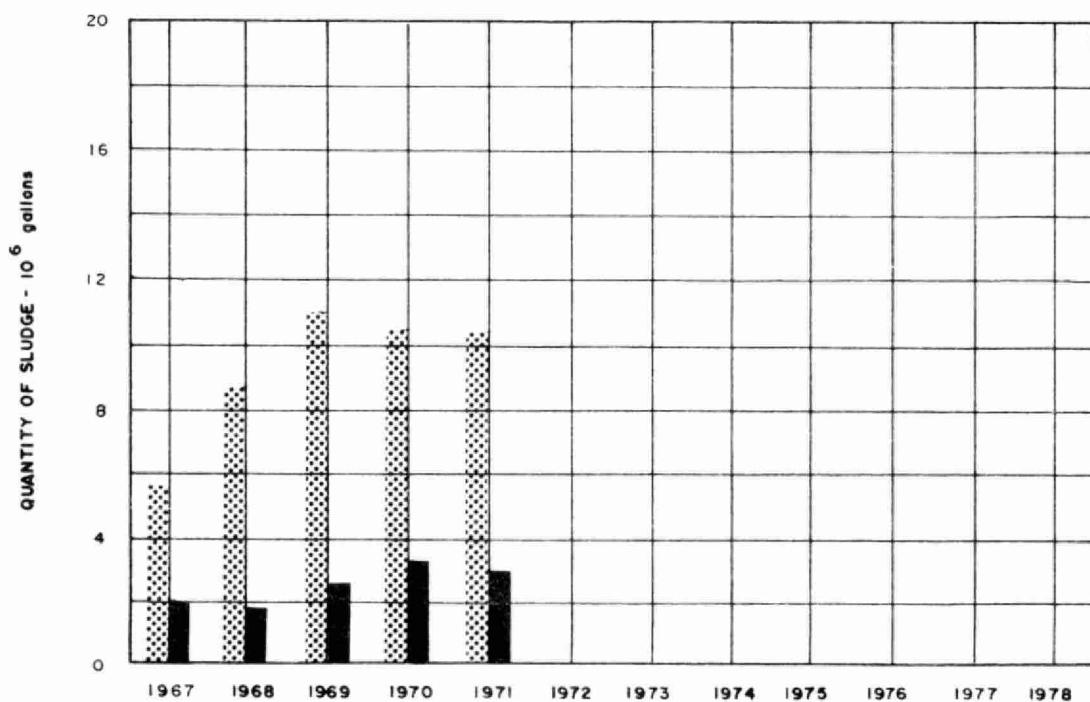
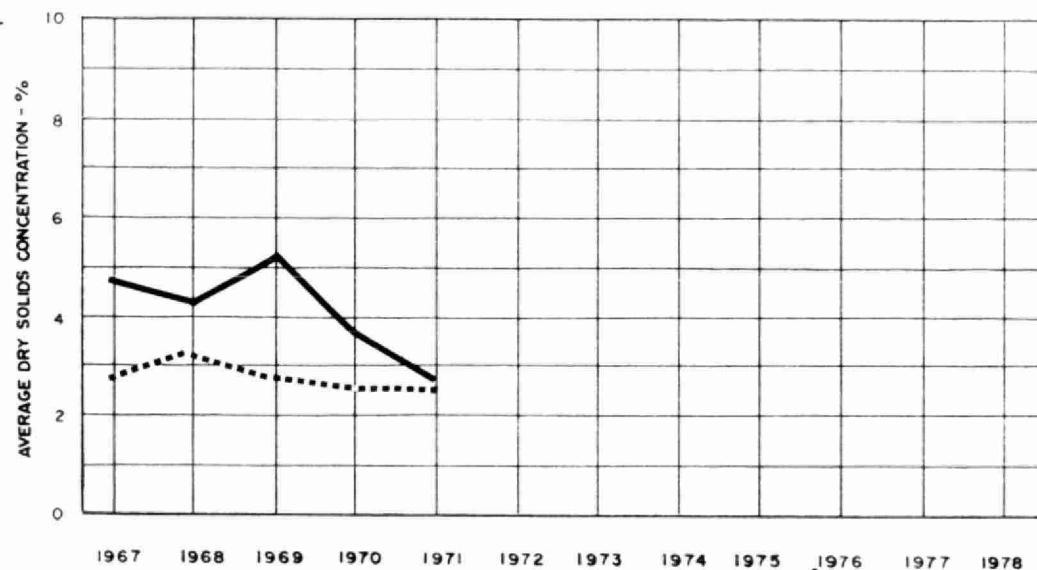


TREATMENT DATA

MONTH	GRIT	CHLORINATION		SLUDGE DIGESTION and DISPOSAL								SLUDGE HAULED cubic yards
		QUANTITY REMOVED cubic feet	CHLORINE USED 10^3 pounds	RAW SLUDGE			DIGESTED SLUDGE			SUPERNATANT		
				QUANTITY 10^5 gallons	TOTAL SOLIDS %	VOLATILE SOLIDS %	QUANTITY REMOVED 10^5 gallons	TOTAL SOLIDS %	VOLATILE SOLIDS %	TOTAL SOLIDS %		
JAN	600	-	-	8.9	2.5	-	2.5	1.4	-	.2	1467	
FEB	660	-	-	8.1	-	-	2.3	-	-	-	1676	
MAR	600	-	-	8.9	-	-	3.9	-	-	-	2345	
APR	1080	-	-	8.7	-	-	2.9	-	-	-	1739	
MAY	1200	3.61	4.3	8.9	-	-	2.5	-	-	-	1481	
JUNE	1390	6.36	5.4	8.7	-	-	2.7	-	-	-	1585	
JULY	1440	5.97	6.9	9.3	1.1	-	2.1	4.7	-	-	1257	
AUG	1615	6.12	9.8	9.0	1.8	-	1.5	.5	-	-	878	
SEPT	1620	5.88	-	8.7	4.6	-	2.4	6.2	56	-	1401	
OCT	1500	5.06	-	8.9	2.8	73	2.2	2.4	67	-	1323	
NOV	1800	5.62	6.9	8.6	3.7	68	2.4	2.7	61	.13	1439	
DEC	1620	6.30	4.4	8.9	2.0	69	2.0	2.4	64	.18	1205	
TOTAL	15125	44.92	-	105.6	-	-	29.4	-	-	-	17796	
AVG.	11.5 cubic feet/mil gal	5.61	6.2	8.8	2.6	70	2.5	2.9	62	.17	1483	

DIGESTION

RAW SLUDGE
 DIGESTED SLUDGE —————



RAW SLUDGE TO DIGESTER

DIGESTED SLUDGE REMOVED

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